

**We claim:**

1. A defensin-stimulating composition, comprising a *Fusobacterium* associated defensin inducer (FAD-1) polypeptide and an excipient.
- 5 2. A defensin-stimulating composition of claim 1, wherein said FAD-1 polypeptide is selected from the group consisting of:
  - a. a polypeptide that comprises an amino acid sequence that is at least 90% identical to the amino acid sequence selected from the groups consisting of SEQ ID NOs.:1, 3, 5, and 7;
  - 10 b. a polypeptide comprising a portion of an amino acid sequence selected from the groups consisting of SEQ ID NOs.:1, 3, 5, and 7, wherein said portion is sufficient to induce beta-defensin-2 or -3 (BD-2 or BD-3) production; and
  - c. a composition comprising a *Fusobacterium* cell wall extract having a molecular weight range of 12-15 kDa which extract induces BD-2 or BD-3 production.
- 15 3. The defensin-stimulating composition of claim 1, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO.: 1, SEQ ID NO.:3, SEQ ID NO.:5, or SEQ ID NO.:7.
4. The The defensin-stimulating composition of claim 2, wherein the polypeptide is a fusion protein comprising an amino acid sequence heterologous to the amino acid sequence of SEQ ID NO.: 1, SEQ ID NO.:3, SEQ ID NO.:5, or SEQ ID NO.:7.
- 20 5. The defensin-stimulating composition of claim 1, further comprising an antimicrobial agent.
6. The defensin-stimulating composition of claim 1, further comprising an antifungal agent.
- 25 7. The defensin-stimulating composition of claim 1 or claim 2 wherein the composition stimulates defensin production in an epithelial cell.
8. The defensin-stimulating composition of claim 1 or claim 2, wherein the composition stimulates defensin production in the mouth.

9. The defensin-stimulating composition of claim 8, wherein the composition is a mouth wash, toothpaste, or film.
10. The defensin-stimulating composition of claim 1 or claim 2, wherein the composition stimulates defensin production in the cornea.
- 5 11. The defensin-stimulating composition of claim 7, wherein the composition is an eye drop or eye cream.
12. The defensin-stimulating composition of claim 1 or claim 2, wherein the composition stimulates defensin production in the skin.
- 10 13. The defensin-stimulating composition of claim 12, wherein the composition is a skin cream or skin lotion.
14. A method for treating a beta-defensin associated disorder comprising administering to a subject in need thereof the defensin-stimulating composition of claim 1.
15. The method of claim 14, wherein the beta-defensin associated disorder is periodontal disease.
- 15 16. The method of claim 14, wherein the beta-defensin associated disorder is an infection.
17. The method of claim 16, wherein said infection is an infection of the cornea, the skin, or a mucosal surface.
18. The method of claim 14, wherein the beta-defensin associated disorder is a BD-2 associated disorder.
- 20 19. The method of claim 14, wherein the beta-defensin associated disorder is a BD-3 associated disorder.
20. The method of claim 14, wherein the infectious agent is a bacterium.
21. The method of claim 20, wherein the bacterium is resistant to one or more antimicrobial agents.
- 25 22. The method of claim 20, wherein the bacterium is *Porphyromonas gingivalis*.
23. The method of claim 16, wherein the infection is caused by a virus.
24. The method of claim 16, wherein the infection is caused by a fungus.
25. The method of claim 24, wherein the fungus is resistant to one or more antifungal agent.

26. The method of claim 14, wherein the beta-defensin associated disorder is cancer.
27. A method for stimulating production of beta-defensin-2 (BD-2), beta-defensin-3 (BD-3), or both comprising contacting a cell with a composition of claim 1 or claim 2.
28. A method of claim 27, wherein the cell is an epithelial cell.
- 5 29. The method of claim 28, wherein the epithelial cell is a cultured epithelial cell.
30. The method of claim 28, wherein the epithelial cell is located in a vertebrate.
31. The method of claim 29, wherein the vertebrate is a human.
32. The method of claim 28, wherein the epithelial cell is selected from the group consisting of: an oral epithelial cell, a corneal epithelial cell, and a keratinocyte.
- 0 33. A method for identifying a composition that stimulates BD-2 or BD-3 expression in an epithelial cell of a vertebrate, the method comprising:
- a. contacting the epithelial cell with a composition comprising an extracellular component of a BD-2 or BD-3 resistant bacterium;
  - b. measuring BD-2 or BD-3 expression in the epithelial cell.
- 5 34. The method of claim 33, wherein the BD-2 or BD-3 resistant bacterium is a commensal organism in the vertebrate.
35. A method of screening for agents that induce an innate immune response in a human comprising providing a cellular extract of a commensal microorganism and determining a change in the innate immune response.
- 0 36. The method of claim 35, wherein commensal microorganism is a BD-2 or BD-3 resistant bacterium.
37. The method of claim 35, wherein the change in the innate immune response is stimulation of BD-2 or BD-3 expression in a cell.